

UNITED STATES DISTRICT COURT  
DISTRICT OF MASSACHUSETTS

UNITED STATES OF AMERICA	)	Criminal No. <u>19cr10195</u>
	)	
v.	)	Violations:
	)	
(1) HAOYANG YU,	)	<u>Counts One - Four</u> : Theft of Trade Secrets
a/k/a JACK YU,	)	(18 U.S.C. § 1832(a)(1) & (a)(4))
a/k/a HARRY YU,	)	
a/k/a JACK TRICON, and	)	<u>Counts Five - Eight</u> : Copying, Uploading,
	)	Downloading of a Trade Secret
(2) TRICON MMIC, LLC,	)	(18 U.S.C. § 1832(a)(2) & (a)(4))
	)	
Defendants	)	<u>Counts Nine - Twelve</u> : Possession of a
	)	Trade Secret (18 U.S.C. § 1832(a)(3) &
	)	(a)(4))
	)	
	)	<u>Counts Thirteen - Fifteen</u> : Smuggling
	)	(18 U.S.C. § 554)
	)	
	)	<u>Forfeiture Allegations</u> :
	)	(18 U.S.C. §§ 981(a)(1)(C) & 2323 &
	)	28 U.S.C. § 2461(c))

SEALED

INDICTMENT

The Grand Jury charges that:

Introductory Allegations

1. HAOYANG YU ("YU"), a/k/a JACK YU, a/k/a HARRY YU, a/k/a JACK TRICON, was born in Harbin, China and first entered the United States in 2002 through the student visa program. In or about June 2009, YU obtained status as a lawful permanent resident ("LPR") and on or about March 8, 2017, YU became a naturalized U.S. citizen. Since in or about 2013, he has resided in Lexington, Massachusetts, with his wife, a Chinese national who obtained status as a LPR in June 2009 ("YU's wife").
2. On or about July 24, 2014, YU began working at Analog Devices, Inc. ("ADI")

as a Principal Design Engineer and YU was employed at ADI until on or about July 31, 2017.

At around the same time YU started working at ADI, on or about July 22, 2014, ADI had acquired Hittite Microwave Corporation (“HMC”) and its intellectual property (including its design files and associated products) for approximately two billion dollars.

3. ADI is a worldwide semiconductor company, which is headquartered in Norwood Massachusetts. It manufactures high performance analog, mixed-signal, and digital signal processing integrated circuits used in electronic equipment. ADI has more than 100,000 customers and sells its data converters, amplifiers and linear products, radio frequency integrated circuits, monolithic microwave integrated circuits (“MMICs”), sensors, power management products, and processing products in interstate and foreign commerce to all states and territories of the United States and to numerous countries throughout the world.

4. While employed at ADI, YU’s responsibilities included the design and development of MMIC parts. MMIC parts are a type of integrated circuits that operate at microwave frequencies, which perform functions such as power amplification, low-noise amplification, and high-frequency switching. They are used in radio, cellular, and satellite communications as well as defense and aerospace applications. As a result of his position at ADI, YU had access to data and information relating to present and future product designs (including performance data and export control specifications), schematics, design layout and modeling files, manufacturing and fabrication process files, and testing procedures.

5. To maintain a high-level of innovation in its product lines, ADI has invested billions of dollars in research and development, including for the advancement of its MMICs line. ADI also has invested a great deal of time and resources to designing, developing, and testing its products so as to remain competitive in a global market. ADI considers information

and data regarding the development and design of ADI products its most important intellectual property and trade secrets. Among other things, ADI considers its design layout, modeling, and schematic design files to be trade secrets, and take steps to protect this confidential and proprietary information.

6. In or about March 2017, approximately five months before YU had resigned his employment at ADI, he established and began operating his own company, TRICON MMIC, LLC (“TRICON”) with his wife. On or about March 15, 2017, YU’s wife organized TRICON as a Massachusetts limited liability company and described the business as “integrated circuit design and service” on the Certificate of Organization. According to TRICON’s website ([www.triconmmic.com](http://www.triconmmic.com)), it “specializes in wide band MMIC amplifiers,” and serves customers in “defense and aerospace, test and instrumentation, [and] satellite communications.”

7. YU’s wife listed the principal business address of TRICON as “1337 Massachusetts Avenue #109, Arlington, Massachusetts 02476” on the Certificate of Organization and Annual Reports for 2018 and 2019 that she filed with the Secretary of Commonwealth, Corporations Division. Similarly, “1337 Massachusetts Avenue, Suite 109, Arlington, Massachusetts” is listed as the business address on TRICON’s website. 1337 Massachusetts Avenue is the address of the United Parcel Service (“UPS”) store in Arlington, Massachusetts and # 109 is the mailbox assigned to TRICON.

8. Since in or about March 2017, YU has been operating TRICON and, using its website, to market for sale approximately 20 ADI and HMC designs as his own. The designs and performance specifications of several of TRICON’s parts are identical or virtually identical to those sold by ADI. Indeed, YU has even used the same semiconductor fabrication plant or foundry as ADI located in Taiwan. Further, based upon the May 28, 2019 version of TRICON’s

website, it has been targeting ADI/HMC customers, claiming that TRICON could better serve such customers because ADI “has hit many customers by sudden announcements of obsolete parts.” Many of the parts TRICON identified on its website as ADI obsolete parts, however, were recently developed by ADI and are still being sold by that company. For each obsolete part TRICON identified on its website, it listed a replacement part being sold by TRICON. These replacement parts contained performance specifications identical or substantially similar to ADI. On or about May 28, 2019, the below chart appeared on TRICON’s website:

Part Number	Description	ADI (Hittite)	Broadcom (Avago)	Data Sheet
TM5051	DC – 52 GHz Driver Amp	HMC1022 with more bandwidth	AMMC-5024 with more bandwidth	<a href="#">pdf</a>
TM5052	2 – 52 GHz Driver Amp	HMC1022 with more bandwidth		<a href="#">pdf</a>
TM5020	DC – 20 GHz Driver Amp	HMC465 with improved NF		<a href="#">pdf</a>
TM5021	2 – 20 GHz LNA	HMC462 with improved NF	AMMC-5020 with improved NF	<a href="#">pdf</a>
TM5024	DC – 20 GHz LNA	HMC460 with improved NF		<a href="#">pdf</a>
TM5029	2 – 20 GHz Driver Amp	HMC464 with improved NF		<a href="#">pdf</a>
TM5010	DC – 20 GHz Driver Amp	HMC465		<a href="#">pdf</a>
TM5011	2 – 20 GHz LNA	HMC462		<a href="#">pdf</a>
TM5014	DC – 20 GHz LNA	HMC460		<a href="#">pdf</a>
TM5019	2 – 20 GHz Driver Amp	HMC464		<a href="#">pdf</a>
TM5030	2 – 30 GHz LNA		AMMC-5026 with improved NF	<a href="#">pdf</a>
TM5054	DC – 30 GHz PA	HMC994		<a href="#">pdf</a>
TM5057	DC – 22 GHz PA	HMC797		<a href="#">pdf</a>
TM5058	0.1 – 22 GHz PA	HMC998		<a href="#">pdf</a>
TM5059	0.1 – 22 GHz PA	HMC907		<a href="#">pdf</a>
TM7040	18 – 45 GHz Driver Amp	HMC-ALH445 with higher power	AMMC-6345	<a href="#">coming soon</a>
TM7070	35 – 70 GHz Driver Amp	HMC1144		<a href="#">coming soon</a>
TM7090	50 – 95 GHz Driver Amp	ADL7003		<a href="#">coming soon</a>
TM7080	71 – 86 GHz E-band LNA	HMC8325		<a href="#">coming soon</a>
TM7071	71 – 76 GHz PA	w/ 25dBm P1dB		<a href="#">coming soon</a>
TM7081	81 – 86 GHz PA	w/ 25dBm P1dB		<a href="#">coming soon</a>

The HMC parts identified in the chart were acquired by ADI as part of its acquisition of Hittite in 2014.

9. While still working at ADI, for his own economic benefit, YU downloaded hundreds of highly confidential schematic design files as well as design layout and modeling files, copied certain portions of those files into excel spreadsheets, and then uploaded those spreadsheets and other confidential ADI data to his personal Google drive account. ADI’s product design files are the most sensitive and valuable intellectual property it owns. For

instance, the files associated with HMC994A - just one of the ADI parts for which YU stole design files and is marketing on his website - are worth millions of dollars, which includes both the cost of the research and development and the yearly profits from the sale of that product. The HMC994A product is a wideband frequency amplifier that is used in aerospace and defense applications, fiber optics, satellite communications, and instrumentation. YU used the files he copied, downloaded, and misappropriated from ADI for his own company, TRICON, to market, manufacture, and sell products to customers located in the United States as well as foreign countries.

10. On or about July 31, 2017, YU had signed an agreement with ADI indicating that upon termination of his employment, he had surrendered all proprietary information or data to ADI. Nevertheless, in or about December 2018, YU had in his possession ADI files associated with confidential design techniques, layout files, production steps, customer financial information, competition strategy and marketing information, and pricing information. YU maintained these files in his Google drive account for his own economic benefit.

11. ADI has used a number of reasonable measures to protect its confidential and proprietary information, including trade secrets, such as:

- a. Restricting physical access to its facilities worldwide and requiring company issued badges to access company facilities;
- b. Restricting access to ADI computer systems by controlling the devices that could connect to the ADI network, using network security mechanisms and firewalls to protect the information on the network from being exfiltrated, limiting the programs that could be installed on company devices, requiring a user name and strong password to access the corporate network, restricting

access to files containing proprietary and confidential information about the design and manufacture of ADI parts to employees with a need to know;

- c. Requiring employees to sign a form acknowledging that they would not disclose or use any confidential information of ADI for their own purposes or for the benefit of any other person;
- d. Requiring any non-employee, including vendors or customers, to sign a non-disclosure agreement before sharing any ADI confidential information with them; and
- e. Requiring employees leaving the company to attend an exit interview, during which the employee is reminded of the obligation to protect confidential and proprietary information of ADI, required to acknowledge in writing that they will not use or disclose any ADI proprietary information, and required to confirm that they have surrendered to ADI any copies of any proprietary information or data in their possession.

12. On or about July 31, 2017, YU resigned from ADI and terminated his employment as its Principal Design Engineer. From in or about August 2017 to the present, YU has been working at a cleared defense contractor while simultaneously operating TRICON and selling parts that are identical, or substantially similar, to ADI products and which incorporate ADI's stolen trade secrets. YU has also used TRICON to illegally export several parts to Spain by concealing both his true name and the export control classification number of the parts being exported on the shipping documents.

COUNTS ONE - FOUR  
Theft and Attempted Theft of a Trade Secret  
(18 U.S.C. § 1832(a)(1) & (a)(4))

The Grand Jury charges:

13. The allegations contained in paragraphs 1 through 12 of this indictment are re-alleged and incorporated as if set forth fully herein.

14. Between in or about September 2016 and in or about July 2017, in the District of Massachusetts, the defendant,

(1) HAOYANG YU,  
a/k/a JACK YU,  
a/k/a HARRY YU,  
a/k/a JACK TRICON,

with the intent to convert a trade secret to the economic benefit of a person other than ADI, and intending and knowing that the offense would injure ADI, did knowingly steal, and appropriate without authorization, and did attempt to do so, trade secrets owned by ADI, specifically, information and data contained in computer files and specified in each count below, which was related to a product used in and intended for use in interstate and foreign commerce:

Count	Description of Trade Secret
1	Performance data and specifications, schematics, design layout and modeling files, manufacturing and fabrication process files, and testing procedures for MMIC part HMC994A;
2	Performance data and specifications, schematics, design layout and modeling files, manufacturing and fabrication process files, and testing procedures for MMIC part HMC462;
3	Performance data and specifications, schematics, design layout and modeling files, manufacturing and fabrication process files, and testing procedures for MMIC part HMC465; and
4	Performance data and specifications, schematics, design layout and modeling files, manufacturing and fabrication process files, and testing procedures for MMIC part ADL7003.

All in violation of Title 18, United States Code, Sections 1832(a)(1) and 1832(a)(4).



COUNTS FIVE - EIGHT

Copying, Uploading, Downloading, and Attempted Copying, Uploading, Downloading of a  
Trade Secret

(18 U.S.C. § 1832(a)(2) & (a)(4))

The Grand Jury further charges:

15. The allegations contained in paragraphs 1 through 12 of this indictment are re-alleged and incorporated as if set forth fully herein.

16. Between in or about September 2016 and in or about July 2017, in the  
District of Massachusetts, the defendant,

(1) HAOYANG YU,  
a/k/a JACK YU,  
a/k/a HARRY YU,  
a/k/a JACK TRICON,

with the intent to convert a trade secret to the economic benefit of a person other than ADI, and  
intending and knowing that the offense would injure ADI, did knowingly and without  
authorization, copy, duplicate, download, upload, and replicate a trade secret owned by ADI, and  
attempt to do so, specifically, information and data contained in computer files and specified in  
each count below, which was related to a product used in and intended for use in interstate and  
foreign commerce:

Count	Description of Trade Secret
5	Performance data and specifications, schematics, design layout and modeling files, manufacturing and fabrication process files, and testing procedures for MMIC part HMC994A;
6	Performance data and specifications, schematics, design layout and modeling files, manufacturing and fabrication process files, and testing procedures for MMIC part HMC462;
7	Performance data and specifications, schematics, design layout and modeling files, manufacturing and fabrication process files, and testing procedures for MMIC part HMC465; and

8	Performance data and specifications, schematics, design layout and modeling files, manufacturing and fabrication process files, and testing procedures for MMIC part ADL7003.
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All in violation of Title 18, United States Code, Sections 1832(a)(2) and 1832(a)(4).

COUNTS NINE - TWELVE

Possession and Attempted Possession of a Trade Secret  
(18 U.S.C. § 1832(a)(3) & (a)(4))

The Grand Jury further charges:

17. The allegations contained in paragraphs 1 through 12 of this indictment are re-alleged and incorporated as if set forth fully herein.

18. On or about December 7, 2018, in the District of Massachusetts, the defendant,

(1) HAOYANG YU,  
a/k/a JACK YU,  
a/k/a HARRY YU,  
a/k/a JACK TRICON,

with the intent to convert a trade secret to the economic benefit of person other than ADI, and intending and knowing that the offense would injure ADI, did knowingly possess a trade secret owned by ADI, knowing the same to have been stolen and appropriated, obtained, and converted without authorization, and did attempt to do so, specifically, information and data contained in the computer files located in YU's Google Drive account specified in each count below, which was related to a product used in and intended for use in interstate and foreign commerce:

Count	File name
9	An excel spreadsheet entitled "temp.xlsx" containing contents of product modeling files generated by ADI's Gallium arsenide (GaAs) modeling group that was located in a restricted access portion of ADI's computer network;
10	An excel spreadsheet entitled "projects.xlsx" containing, among other things, design techniques, production steps, manufacturing details and processes, pricing and financial information, and marketing information pertaining to numerous ADI parts including HMC1114, HMC7203/4, HMC994, HMC7950, HMC998, HMC863, HMC8257, HMC8205, HMC907, HMC797, and ADL7003;
11	A power point file entitled "2014-now.pptx" containing, among other things, information from a design file for a ADI HMC8257 amplifier; and

12	An excel spreadsheet entitled "status.xlsx" containing customer financial information including ADI parts sold to each customer, the quantity of each ADI part purchased, and the price charged to each customer for each ADI part.
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All in violation of Title 18, United States Code, Sections 1832(a)(3) and 1832(a)(4).

**COUNTS THIRTEEN - FIFTEEN**

Smuggling  
(18 U.S.C. § 554)

The Grand Jury further charges:

19. The allegations contained in paragraphs 1-12 are hereby re-alleged and incorporated by reference as if fully set forth herein.

20. On or about the dates listed as to each count, in the District of Massachusetts and elsewhere, the defendants

(1) HAOYANG YU,  
a/k/a JACK YU,  
a/k/a HARRY YU,  
a/k/a JACK TRICON; and

(2) TRICON MMIC, LLC,

did fraudulently and knowingly buy, sell, receive, and facilitate the transportation, concealment, and sale of merchandise, articles, and objects described more fully below, contrary to the laws and regulations of the United States; and did fraudulently and knowingly export and send and cause to be exported and sent from the United States merchandise, articles, and objects contrary to the laws and regulations of the United States, that is, 50 U.S.C. § 1705, 15 C.F.R.

§§ 736.2(b)(10), 758.1, 764.2, Executive Order 13222, and Export Control Reform Act of 2018, 50 U.S.C. § 4819:

Count	Approximate Date of Export	Item Description
13	May 31, 2018	Two electronic integrated circuits, part number TM5054
14	June 18, 2018	Two electronic integrated circuits, part number TM5054
15	November 29, 2018	Five electronic integrated circuits, part number TM5054

**All in violation of Title 18, United States Code, Sections 554 and 2.**

THEFT OF TRADE SECRETS FORFEITURE ALLEGATION  
(18 U.S.C. § 2323)

21. Upon conviction of one or more of the offenses in violation of Title 18, United States Code, Section 1832, set forth in Counts One through Twelve of this Indictment, the defendant

(1) HAOYANG YU,  
a/k/a JACK YU,  
a/k/a HARRY YU,  
a/k/a JACK TRICON,

shall forfeit to the United States, pursuant to Title 18, United States Code, Section 2323:

- a. any article, the making or trafficking of which is, prohibited under section 506 of title 17, or section 2318, 2319, 2319A, 2319B, or 2320, or chapter 90, of this Title 18;
- b. any property used, or intended to be used, in any manner or part to commit or facilitate the commission of the offense; and
- c. any property constituting or derived from any proceeds obtained directly or indirectly as a result of the commission of the offense.

22. If any of the property described in Paragraph 21, above, as being forfeitable pursuant to Title 18, United States Code, Section 2323, as a result of any act or omission of the defendant --

- a. cannot be located upon the exercise of due diligence;
- b. has been transferred or sold to, or deposited with, a third party;
- c. has been placed beyond the jurisdiction of the Court;
- d. has been substantially diminished in value; or
- e. has been commingled with other property which cannot be divided without difficulty;

it is the intention of the United States, pursuant to Title 18, United States Code, Section 2323(b)(2)(A), incorporating Title 21, United States Code, Section 853(p), to seek forfeiture of

any other property of the defendant up to the value of the property described in Paragraph 1 above.

All pursuant to Title 18, United States Code, Section 2323.



SMUGGLING FORFEITURE ALLEGATION  
(18 U.S.C. § 981(a)(1)(C) and 28 U.S.C. § 2461(c))

23. Upon conviction of one or more of the offenses in violation of Title 18, United States Code, Section 554, set forth in Counts Thirteen through Fifteen of this Indictment, the defendants

(1) HAOYANG YU,  
a/k/a JACK YU,  
a/k/a HARRY YU,  
a/k/a JACK TRICON, and

(2) TRICON MMIC, LLC,

shall forfeit to the United States, pursuant to Title 18, United States Code, Section 981(a)(1)(C), and Title 28, United States Code, Section 2461(c), any property, real or personal, which constitutes or is derived from proceeds traceable to the offenses.

24. If any of the property described in Paragraph 23, above, as being forfeitable pursuant to Title 18, United States Code, Section 981(a)(1)(C), and Title 28, United States Code, Section 2461(c), as a result of any act or omission of the defendants --

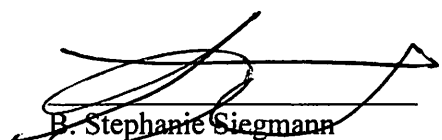
- f. cannot be located upon the exercise of due diligence;
- g. has been transferred or sold to, or deposited with, a third party;
- h. has been placed beyond the jurisdiction of the Court;
- i. has been substantially diminished in value; or
- j. has been commingled with other property which cannot be divided without difficulty;

it is the intention of the United States, pursuant to Title 28, United States Code, Section 2461(c), incorporating Title 21, United States Code, Section 853(p), to seek forfeiture of any other property of the defendants up to the value of the property described in Paragraph 1 above.

All pursuant to Title 18, United States Code, Section 981(a)(1)(C), and Title 28, United States Code, Section 2461(c).

A TRUE BILL


Susan Reale  
FOREPERSON OF THE GRAND JURY

  
B. Stephanie Siegmann  
George Varghese  
Assistant U.S. Attorneys

DISTRICT OF MASSACHUSETTS, Boston, MA

June 11, 2019

Returned into the District Court by the Grand Jurors and filed.

  
Deputy Clerk  
6/11/2019  
@ 4:34PM